INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004790

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/38 H04L1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/37693 A (AMRANI OFER ; ARIEL MEIR (IL); CUTE LTD (IL)) 10 May 2002 (2002-05-10) page 1 page 2, lines 13,14 pages 3-5 page 6, lines 9-16 page 10, lines 7-13 page 11, lines 5-15	1-8, 12-19, 23-30
P,X	EP 1 292 057 A (UGA SHINKSUKE; MITSHUBISHI DENKI KABUSHIKI KAISHA) 12 March 2003 (2003-03-12) paragraphs '0001!, '0004!, '0006!, '0008! - '0014!, '0022!, '0027!, '0028!, '0035! - '0038!	1-8, 12-19, 23-30

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 February 2005	07 03 2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Englund, T

Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	-& WO 02/063818 A (UGA SHINSUKE ; MITSUBISHI ELECTRIC CORP (JP)) 15 August 2002 (2002-08-15)	1-8, 12-19, 23-30
X	WO 02/33838 A (NORTEL NETWORKS LTD ; TONG WEN (CA); PICKHOLTZ RAYMOND (US); VOJCIC BR) 25 April 2002 (2002-04-25) page 1, lines 17,18 page 3, lines 8-10 page 5, lines 3-12 page 8, line 20 - page 10, line 5	1-8, 12-19, 23-30
X	US 5 406 585 A (GHOSH AMITAVA ET AL) 11 April 1995 (1995-04-11)	1-5, 12-16, 23-27
A	column 2, lines 14-22 column 3, line 10 - column 4, line 65	6-8, 17-19, 28-30
X	ATTAR R A ET AL: "A reverse link outer-loop power control algorithm for cdma2000 1xEV systems" ICC 2002. 2002 IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS. CONFERENCE PROCEEDINGS. NEW YORK, NY, APRIL 28 - MAY 2, 2002, IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS, NEW YORK, NY : IEEE, US, vol. VOL. 1 OF 5, 28 April 2002 (2002-04-28), pages 573-578, XP010589559 ISBN: 0-7803-7400-2 pages 573-576	1-5, 9-16, 20-27, 31-33
A	3RD GENERATION PARTNERSHIP PROJECT, TECHNICAL SPECIFICATION GROUP RADIO ACCESS NETWORK: "3GPP TS 25.322 V4.7.0 ; Radio Link Control (RLC) protocol specification ; Release 4" 3GPP, December 2002 (2002-12), pages 1-76, XP002294128 pages 54-55 pages 63-67 pages 23-42	1-8, 12-19, 23-30

-/---

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SOHN I ET AL: "Blind rate detection algorithm in WCDMA mobile receiver" VTC FALL 2001. IEEE 54TH. VEHICULAR TECHNOLOGY CONFERENCE. PROCEEDINGS. ATLANTIC CITY, NJ, OCT. 7 - 11, 2001, IEEE VEHICULAR TECHNOLGY CONFERENCE, NEW YORK, NY : IEEE, US, vol. VOL. 1 OF 4. CONF. 54, 7 October 2001 (2001-10-07), pages 1589-1592, XP010562230 ISBN: 0-7803-7005-8 the whole document	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/004790

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8, 12-19, 23-30

Method, system and base station for analysing the history of changes in received packets.

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2. claims: 9-11, 20-22 and 31-33

Method, system and base station for validating the correctness of a no-packet indication on a control channel.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US2004/004790

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0237693 A	10-05-2002	AU 1423402 A	15-05-2002
		WO 0237693 A2	10-05-2002
EP 1292057 A	12-03-2003	WO 02063818 A1	15-08-2002
		EP 1292057 A1	12-03-2003
		US 2003088819 A1	08-05-2003
WO 02063818 A	15-08-2002	WO 02063818 A1	15-08-2002
		EP 1292057 A1	12-03-2003
		US 2003088819 A1	08-05-2003
WO 0233838 A	25-04-2002	AU 1485302 A	29-04-2002
		WO 0233838 A2	25-04-2002
		CN 1478330 T	25-02-2004
		EP 1329032 A2	23-07-2003
US 5406585 A	11-04-1995	NONE	

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 September 2004 (10.09.2004)

PCT

(10) International Publication Number
WO 2004/077726 A3

(51) International Patent Classification[7]: H04Q 7/32

(21) International Application Number:
PCT/US2004/004792

(22) International Filing Date: 18 February 2004 (18.02.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/448,269	18 February 2003 (18.02.2003)	US
60/452,790	6 March 2003 (06.03.2003)	US
60/470,770	14 May 2003 (14.05.2003)	US
10/628,950	28 July 2003 (28.07.2003)	US

(71) Applicant and
(72) Inventor: **QUALCOMM, Incorporated** [US/US]; 5775 Morehouse Drive, San Diego, California 92121 (US).

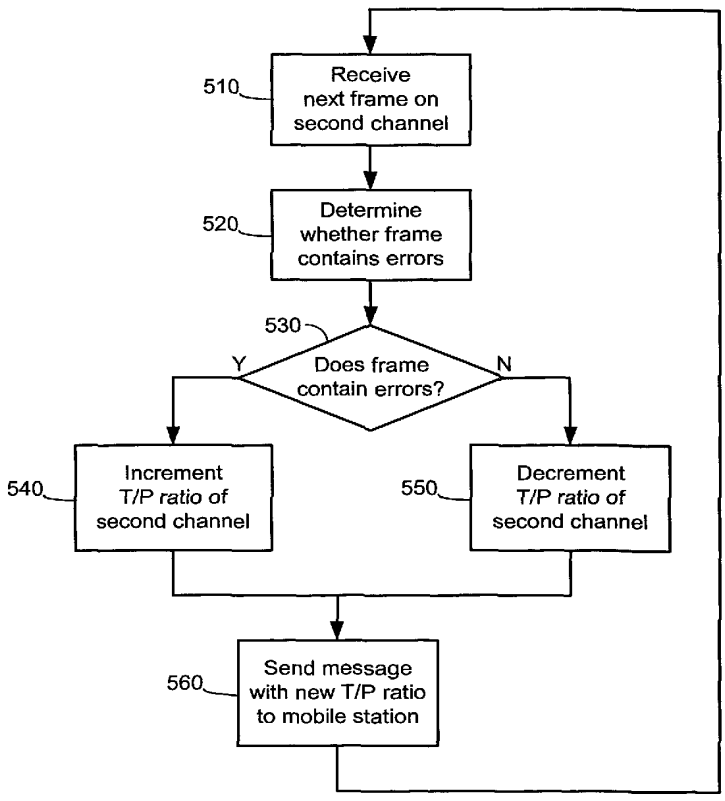
(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **WEI, Yongbin** [CN/US]; 12140 Brickellia Street, San Diego, California 92129 (US). **CHEN, Tao** [US/US]; 5415 Harvest Run Drive, San Diego, California 92130 (US).

(74) Agents: **MINHAS, Sandip** et al.; 5775 Morehouse Drive, San Diego, Califonia 92121 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: OUTER-LOOP POWER CONTROL FOR WIRELESS COMMUNICATION SYSTEMS



(57) Abstract: Systems and methods for controlling power in a wireless communication system having multiple reverse-link channels. One embodiment comprises adjusting power levels of a first set of channels and a corresponding pilot channel while maintaining a set traffic-to-pilot (T/P) ratio between them, and adjusting T/P ratios for one or more remaining channels independently of the power level of the pilot channel. A base station determines whether frames received on the first set of channels contain errors and sends messages to a mobile station to increment or decrement the power levels, respectively, if the frames do or do not contain errors. T/P ratios of the additional channels are adjusted by determining whether frames received on the additional channels contain errors, incrementing or decrementing the T/P ratios appropriately, and transmitting the T/P ratios to the mobile station, which controls the transmission parameters for the respective channels in accordance with the received T/P ratios.

WO 2004/077726 A3

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
6 January 2005

(15) Information about Correction:
Previous Correction:
see PCT Gazette No. 48/2004 of 25 November 2004, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004792

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SARKAR S ET AL: "cdma2000 reverse link: design and system performance" 2000 IEEE, vol. 6, 24 September 2000 (2000-09-24), pages 2713-2719, XP010525079 figures 1,2 page 2714, left-hand column, lines 1-15 page 2714, right-hand column, line 19 - page 2715, left-hand column, line 3 page 2717, right-hand column, lines 1-36 page 2718, left-hand column, line 28 - right-hand column, line 2	1-41
A	WO 01/99303 A (QUALCOMM INC) 27 December 2001 (2001-12-27) page 3, line 16 - page 4, line 14 page 8, line 19 - page 9, line 23	1-41

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 October 2004	08/11/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Alonso Maleta, J

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004792

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02/080400 A (QUALCOMM INC) 10 October 2002 (2002-10-10) paragraphs '0013!, '0017!, '0021! - '0024! paragraphs '0026!, '0027!, '0030! paragraphs '0032!, '0035!, '0037! - '0043!	1-41
A	WO 98/36606 A (QUALCOMM INC) 20 August 1998 (1998-08-20) abstract page 3, line 38 - page 6, line 5 page 7, line 3 - page 10, line 2	1-41
A	ADAPTIVE CONTROL OF THE REVERSE LINK IN CDMA2000, 'Online! January 2002 (2002-01), pages 55-70, XP002300880 INTERNATIONAL JOURNAL OF WIRELESS INFORMATION NETWORKS, VOL 9, NO 1 Retrieved from the Internet: URL:http://www.kluweronline.com/article.as p?PIPS=371065> 'retrieved on 2004-10-12! abstract page 55, left-hand column, line 19 - page 56, left-hand column, line 2 page 56, left-hand column, line 31 - right-hand column, line 11 page 58, right-hand column, line 12 - page 62, left-hand column, line 13	1-41

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004792

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0199303 A	27-12-2001	AU 7000901 A	02-01-2002
		CN 1437802 T	20-08-2003
		EP 1295407 A2	26-03-2003
		JP 2003536347 T	02-12-2003
		TW 529312 B	21-04-2003
		WO 0199303 A2	27-12-2001
WO 02080400 A	10-10-2002	US 2002142791 A1	03-10-2002
		EP 1374438 A2	02-01-2004
		TW 560208 B	01-11-2003
		WO 02080400 A2	10-10-2002
WO 9836606 A	20-08-1998	US 5991284 A	23-11-1999
		AU 6277898 A	08-09-1998
		CN 1307758 T	08-08-2001
		EP 1016299 A1	05-07-2000
		JP 2002501689 T	15-01-2002
		WO 9836606 A2	20-08-1998
		US 6240071 B1	29-05-2001
		US 2001010684 A1	02-08-2001

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 030228WO	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/US04/04792	International filing date *(day/month/year)* 18 February 2004 (18.02.2004)	Priority date *(day/month/year)* 18 February 2003 (18.02.2003)
International Patent Classification (IPC) or national classification and IPC IPC: **H04B 7/00**(2006.01) USPC: 455/522		
Applicant QUALCOMM, INC.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *(sent to the applicant and to the International Bureau)* a total of ___ sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____ , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 10 September 2004 (10.09.2004)	Date of completion of this report 21 June 2006 (21.06.2006)
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Shaima Q. Aminzay Telephone No. 571-272-7874

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/04792

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4(a))

☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:
pages 1-18 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the claims:
pages 19-27 as originally filed/furnished
pages* NONE as amended (together with any statement) under Article 19
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the drawings:
pages 1-7 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/04792

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-41	NO
Inventive Step (IS)	Claims NONE	YES
	Claims 1-41	NO
Industrial Applicability (IA)	Claims 1-41	YES
	Claims NONE	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**

Continuation of:

V. 2. Citations and Explanations:
Claims 1-41 lacks novelty under PCT Article 33(2) as being anticipated by Sarkar (Sarkar et al. "cdma2000 Reverse Link", 200 IEEE, Vol. 6, 24 September 2000. XP-02300880).

Regarding claim 1, Sarkar discloses a method for controlling power in a wireless communication system having multiple reverse-link communication channels, the method comprising: adjusting power levels of a first set of channels and a corresponding pilot channel; and adjusting traffic-to-pilot (T/P) ratios for one or more remaining channels independently of the power level of the pilot channel.

Regarding claim 2, Sarkar discloses further comprising maintaining ratios of the power levels of the first set of channels and the pilot channel while adjusting the power levels of the first set of channels and the pilot channel.

Regarding claim 3, Sarkar discloses wherein the first set of channels comprises a single channel, wherein adjusting the power levels of the first set of channels and the corresponding pilot channel comprises determining whether data received on the single channel contains errors and, if the data received on the single channel contains errors, incrementing the power levels of the single channel and the corresponding pilot channel and, if the data received on the single channel does not contain errors, decrementing the power levels of the single channel and the corresponding pilot channel.

Regarding claim 4, Sarkar discloses wherein determining whether the data received on the single channel contains errors is performed by a base station, wherein the method further comprises the base station sending a message to a mobile station to increment or decrement the power levels of the single channel and the corresponding pilot channel.

Regarding claim 5, Sarkar discloses wherein incrementing the power levels of the single channel and the corresponding pilot channel is performed by the mobile station in response to the message.

Supplemental Box

Regarding claim 6, Sarkar discloses wherein the single channel comprises a voice channel.

Regarding claim 7, Sarkar discloses wherein the first set of channels comprises multiple channels, wherein adjusting the power levels of the first set of channels and the corresponding pilot channel comprises determining for each channel in the first set whether data received on the single channel contains errors and determining a composite adjustment of the power levels of the first set of channels and the corresponding pilot channel based on errors received on the multiple channels.

Regarding claim 8, Sarkar discloses wherein determining the composite adjustment of the power levels of the first set of channels and the corresponding pilot channel comprises: for each channel in the first set, determining whether data received on the channel contains errors, if the data received on the channel contains errors, determining a corresponding incremental power level adjustment, and if the data received on the single channel does not contain errors, determining a corresponding decremental power level adjustment; and computing the composite adjustment as a function of the incremental and decremental power level adjustments for the channels in the first set.

Regarding claim 9, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the maximum incremental power level adjustment and all of the decremental power level adjustments.

Regarding claim 10, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the maximum incremental power level adjustment to the minimum decremental power level adjustment.

Regarding claim 11, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the minimum incremental power level adjustment to the maximum decremental power level adjustment.

Regarding claim 12, Sarkar discloses wherein the function of the incremental and decremental power level adjustments is constrained to a limited number of quantized levels.

Regarding claim 13, Sarkar discloses wherein adjusting the T/P ratios for each of the one or more remaining channels comprises determining whether data received on the channel contains errors and, if the data received on the channel contains errors, incrementing the T/P ratio for the channel and, if the data received on the channel does not contain errors, decrementing the T/P ratio for the channel.

Regarding claim 14, Sarkar discloses wherein determining whether the data received on the channel contains errors and incrementing or decrementing the T/P ratio for the channel is performed by a base station, wherein the method further comprises the base station sending a message to a mobile station indicating the T/P ratio for the channel.

Regarding claim 15, Sarkar discloses the mobile station receiving the message and selecting transmission characteristics for the channel in accordance with the T/P ratio for the channel.

Regarding claim 16, Sarkar discloses a system for controlling power in a wireless communication system having multiple reverse-link communication channels, comprising: a base station; and a mobile station coupled to the base station via a wireless communication link; wherein the base station is configured to receive data from the mobile station on a plurality of reverse-link channels on the wireless communication link; and wherein the base station is configured to adjust a power level for a first set of reverse-link channels and a power level for a pilot channel, and to adjust a traffic-to-power (T/P) ratio for each of one or more additional reverse-link channels.

Regarding claim 17, Sarkar discloses wherein the base station is configured to adjust the power levels for the first set of reverse-link channels and the pilot channel to maintain ratios of the power levels for the first set of reverse-link channels to the power level of the pilot channel.

Regarding claim 18, Sarkar discloses wherein the first set of channels comprises a single channel and wherein the base station is configured to determine whether data received on the single reverse-link channel contains errors and, if the data received on the single reverse-link channel contains errors, to cause the power levels of the single reverse-link channel and the pilot channel to be incremented and, if the data received on the single reverse-link channel does not contain errors, to cause the power levels of the single reverse-link channel and the pilot channel to be decremented..

Regarding claim 19, Sarkar discloses wherein the base station is configured to cause the power levels of the single reverse-link channel and the pilot channel to be incremented or decremented by sending corresponding messages to the mobile station.

Regarding claim 20, Sarkar discloses wherein the mobile station is configured to increment or decrement the power levels of the single reverse-link channel and the pilot channel in accordance with the messages.

Regarding claim 21, Sarkar discloses wherein the first set of channels comprises multiple channels, wherein the system is configured to adjust the power levels of the first set of channels and the corresponding pilot channel by determining for each channel in the first set whether data received on the single channel contains errors and determining a composite adjustment of the power levels of the first set of

Supplemental Box

channels and the corresponding pilot channel based on errors received on the multiple channels.

Regarding claim 22, Sarkar discloses wherein the system is configured to determine the composite adjustment of the power levels of the first set of channels and the corresponding pilot channel by: for each channel in the first set, determining whether data received on the channel contains errors, if the data received on the channel contains errors, determining a corresponding incremental power level adjustment, and if the data received on the single channel does not contain errors, determining a corresponding decremental power level adjustment; and computing the composite adjustment as a function of the incremental and decremental power level adjustments for the channels in the first set.

Regarding claim 23, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the maximum incremental power level adjustment and all of the decremental power level adjustments.

Regarding claim 24, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the maximum incremental power level adjustment to the minimum decremental power level adjustment.

Regarding claim 25, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the minimum incremental power level adjustment to the maximum decremental power level adjustment.

Regarding claim 26, Sarkar discloses the function of the incremental and decremental power level adjustments is constrained to a limited number of quantized levels.

Regarding claim 27, Sarkar discloses wherein the base station is configured to determine whether data received on each additional reverse-link channel contains errors and, if the data received on the additional reverse-link channel contains errors, incrementing the T/P ratio of the additional reverse-link channel and, if the data received on the additional reverse-link channel does not contain errors, decrementing the T/P ratio of the additional reverse-link channel.

Regarding claim 28, Sarkar discloses wherein the base station is configured to send messages indicating the incremented or decremented T/P ratio of the additional reverse-link channel to the mobile station.

Regarding claim 29, Sarkar discloses wherein the mobile station is configured to set a power level of the additional reverse-link channel in accordance with the messages.

Regarding claim 30, Sarkar discloses a base station operable to communicate with a mobile station via a wireless communication channel, wherein the base station comprises: a processing subsystem; and a transceiver subsystem coupled to the processing subsystem; wherein the transceiver subsystem is configured to receive signals on a first set of reverse-link channels, a pilot channel and one or more additional reverse-link channels; and wherein the base station is configured to adjust power levels for the first set of reverse-link channels and a power level for the pilot channel, and to adjust a traffic-to-power (T/P) ratio for each of the one or more additional reverse-link channels.

Regarding claim 31, Sarkar discloses wherein the first set of reverse-link channels comprises a single reverse-link channel, wherein the base station is configured to adjust the power levels for the single reverse-link channel and the pilot channel to maintain a ratio of the power level for the single reverse-link channel to the power level of the pilot channel.

Regarding claim 32, Sarkar discloses wherein the base station is configured to determine whether data received on the single reverse-link channel contains errors and, if the data received on the single reverse-link channel contains errors, to cause the power levels of the single reverse-link channel and the pilot channel to be incremented and, if the data received on the single reverse-link channel does not contain errors, to cause the power levels of the single reverse-link channel and the pilot channel to be decremented.

Regarding claim 33, Sarkar discloses wherein the base station is configured to cause the power levels of the single reverse-link channel and the pilot channel to be incremented or decremented by sending corresponding messages to a mobile station which is configured to increment or decrement the power levels of the single reverse-link channel and the pilot channel in accordance with the messages.

Regarding claim 34, Sarkar discloses wherein the first set of channels comprises multiple channels, wherein the base station is configured to adjust the power levels of the first set of channels and the corresponding pilot channel by determining for each channel in the first set whether data received on the single channel contains errors and determining a composite adjustment of the power levels of the first set of channels and the corresponding pilot channel based on errors received on the multiple channels.

Regarding claim 35, Sarkar discloses wherein the base station is configured to determine the composite adjustment of the power levels of the first set of channels and the corresponding pilot channel by: for each channel in the first set, determining whether data received on the channel contains errors, if the data received on the channel contains errors, determining a corresponding incremental power level adjustment, and if the data received on the single channel does not contain errors, determining a corresponding decremental power level adjustment; and computing the composite adjustment as a function of the incremental and decremental power level adjustments for the channels in the first set.

Supplemental Box

Regarding claim 36, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the maximum incremental power level adjustment and all of the decremental power level adjustments.

Regarding claim 37, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the maximum incremental power level adjustment to the minimum decremental power level adjustment.

Regarding claim 38, Sarkar discloses wherein the function of the incremental and decremental power level adjustments for the channels in the first set comprises adding the minimum incremental power level adjustment to the maximum decremental power level adjustment.

Regarding claim 39, Sarkar discloses wherein the function of the incremental and decremental power level adjustments is constrained to a limited number of quantized levels.

Regarding claim 40, Sarkar discloses wherein the base station is configured to determine whether data received on each additional reverse-link channel contains errors and, if the data received on the additional reverse-link channel contains errors, incrementing the T/P ratio of the additional reverse-link channel and, if the data received on the additional reverse-link channel does not contain errors, decrementing the T/P ratio of the additional reverse-link channel.

Regarding claim 41, Sarkar discloses wherein the base station is configured to send messages indicating the incremented or decremented T/P ratio of the additional reverse-link channel to a mobile station which is configured to set a power level of the additional reverse-link channel in accordance with the messages.

---------- NEW CITATIONS ----------

International Application No
PCT/US2004/004669

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04J11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of box C.

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° Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
15 July 2004	27/07/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL -- 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Nilsson, M

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004788

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/38 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

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Date of the actual completion of the international search	Date of mailing of the international search report
16 September 2004	24/09/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Englund, T

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International Application No
PCT/US2004/004787

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q

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Date of the actual completion of the international search	Date of mailing of the international search report
27 August 2004	13/09/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Alonso Maleta, J

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004668

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

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IPC 7 H04Q

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27 September 2004	04/10/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Englund, T

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/004668

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 September 2004 (16.09.2004)

PCT

(10) International Publication Number
WO 2004/080106 A3

(51) International Patent Classification[7]: H04Q 7/38

(21) International Application Number:
PCT/US2004/007015

(22) International Filing Date: 8 March 2004 (08.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/452,790 6 March 2003 (06.03.2003) US
10/794,917 5 March 2004 (05.03.2004) US

(71) Applicant *(for all designated States except US)*: **QUALCOMM, INCORPORATED** [US/US]; 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **MALLADI, Durga, Prasad** [IN/US]; 11983 Briarleaf Way, San Diego, CA 92128 (US).

(74) Agents: **WADSWORTH, Philip, R.** et al.; 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

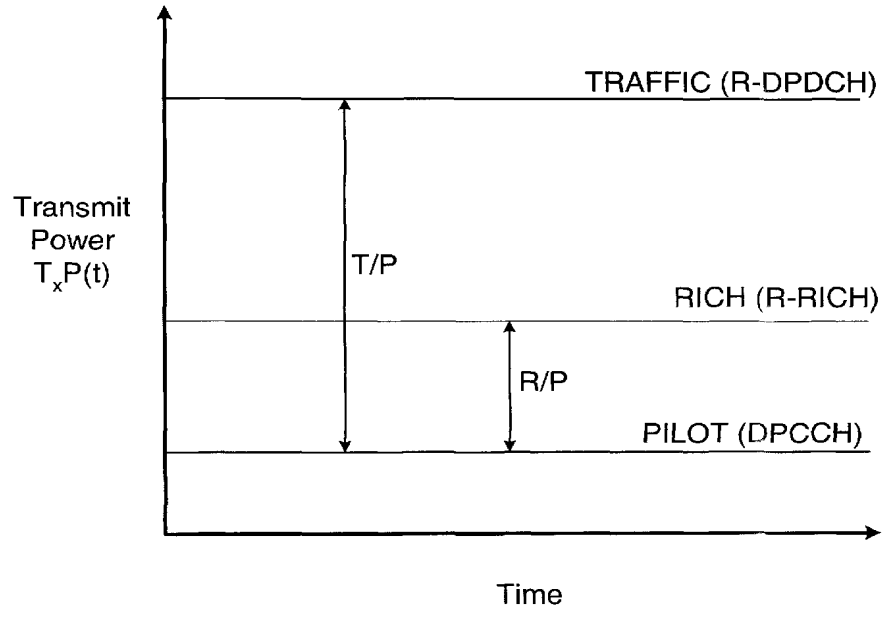
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,*

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR PROVIDING UPLINK SIGNAL-TO-NOISE RATIO (SNR) ESTIMATION IN A WIRELESS COMMUNICATION SYSTEM



(57) Abstract: A method and apparatus for providing uplink signal-to-noise ratio (SNR) estimation in a wireless communication system. A first signal is received over a first channel and a second signal is received over a second channel, where the second signal is received at a higher signal power level than said first signal. A signal-to-noise ratio (SNR) of the second signal is measured, and the SNR of the first signal is determined based at least in part upon the measured SNR of the second signal.

WO 2004/080106 A3

CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

— *with international search report*

(88) Date of publication of the international search report:
17 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
[redacted]/US2004/007015

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/154610 A1 (CHEN TAO ET AL) 24 October 2002 (2002-10-24) paragraphs '0007!, '0036!, '0042! paragraphs '0045!, '0047!, '0094! paragraphs '0095!, '0099! figure 3A	1-37
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A	WO 02/01762 A (SAMSUNG ELECTRONICS CO LTD) 3 January 2002 (2002-01-03) abstract page 2, line 15 - page 4, line 17 page 5, line 12 - line 24	1-37

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 November 2004	16/11/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Alonso Maleta, J

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Information on patent family members

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PCT/US2004/007015

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